Shri Mata Vaishno Devi University, Katra

School of Electronics & Communication Engineering

B. Tech. (E&CE) Minor / Major Examination (Even Semester) 2018-19

Entry No. 17BEC033 Date: 04/02/2019

Course Title: Microprocessor Systems / Microprocessors & Microcontrollers

Course Code: ECL 2060/2062

Time Allowed: 1 ½ Hours Max Marks: [20]

i. Attempt All Questions. ii. Make Assumptions as needed

Q1. **Answer the following in brief: (5 x 1 = 05 Marks)**

(a) How many times will the DCR instruction be executed in the following program? Why? CO1

```
      LXI H, 3000H
Again: DCR L
      JNZ Again
```

(b) What will be the contents of AC (Auxiliary Carry Flag) after execution of following? CO1

```
MVI A, 7DH
SUI 0FH
```

(c) What will be the contents of CY (Carry Flag) after execution of following? Why? CO1

```
MVI A, 7DH
MVI B, 5FH
STA 2010H
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(d) Draw a properly labeled Timing Diagram of a typical Memory Write cycle of 8085. CO1

(e) Draw circuit diagram showing the de-multiplexing of the Multiplexed Address Data Bus of 8085 µ-processor. CO2

Q2. Write a program in 8085 Assembly language to compare the two bytes stored at memory location 3000H & 3001H and store 00H at 3002H if both the numbers are equal else store 01H at 3002H. **(03 Marks)** CO3

Q3. (a) Design and draw circuit diagram showing the interface of one 8KB ROM & one 8 KB RAM with 8085 µ-processor with starting address of ROM at 0000H. **(03 Marks)** CO2

(b) Write a program in 8085 Assembly language to perform the subtraction of a 16 bit number stored at 3000H (LSB) & 3001H (MSB) from another 16 bit number stored at 3002H(LSB) & 3003H (MSB) and store the 16 bit result at 3004H (LSB) & 3005H (MSB). **(03 Marks)** CO3

Q4. Draw properly labeled Timing diagram illustrating the status of the various buses and important control signals for the fetch and execute cycle for the following 8085 instructions: LDA 2030H. Assume that this instruction is stored starting from memory location 0000H. **(03 Marks)** CO1

Q5. Write a program in 8085 Assembly language to copy 16 bytes of data starting from memory location 4000H to memory location starting from 3000H in reverse (Data from 4000H to 300FH, 4001H to 300EH and so on) while storing 00h in the 16 source locations from 4000H. **(03 Marks)** CO3

Course Outcomes

CO No.	CO Description	Questions Mapping	Total Marks
CO1	Identify detailed Hardware and functional architecture of 8085 µ-processor and 8051 µ-controller along with their instruction set	1(a, b, c, d), 4	07
CO2	Design and analyze hardware interface circuits for various applications using 8085 µ-processor and 8051 µ-controller along with various peripherals	1(e), 3(a)	04
CO3	Design and write software in Assembly language and Embedded C for applications which use 8085 µ-processor and 8051 µ-controller	2, 3(b), 5	09